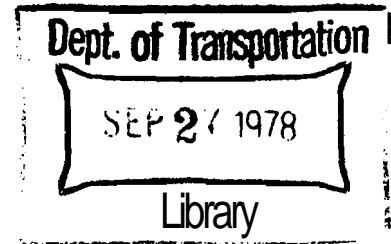RA-OPPD-78-14

PROPOSED RESEARCH PLAN TO IMPROVE RAILROAD EMPLOYEE TRAINING

APRIL 1978

Prepared For

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
Office of Policy and Program Development
Washington, D.C. 20590

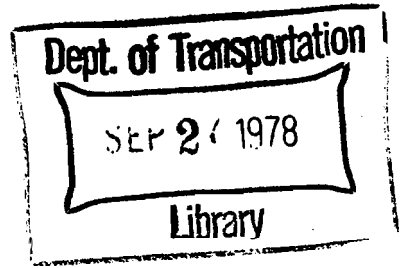| 1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FRA-OPPD-78-14.		

4. Title and Subtitle	5. Report Date
Proposed Research Plan to Improve Railroad Employee Training,	December 1977
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.

9. Performing Organization Name and Address	10. Work Unit No.
D. A. Stewart and Associates' 218 N. Church Street Moorestown, New Jersey 08057	
	11. Contract or Grant No.
	DOT-FR -75145
	13. Type of Report and Period Covered

12. Sponsoring Agency Name and Address	
Federal Railroad Administration 400 7th Street, S.W. Washington, D.C. 20590	
	14. Sponsoring Agency Code

15. Supplementary Notes

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16. Abstract

The purpose of this study was to present an overall research plan for consideration by the Federal Railroad Administration which would aid the railroad industry in fulfilling its employee training needs. A sample of eight railroads, including both rail labor and management representatives were interviewed to determine the extent of existing training and to gain insights as to a possible role of the Federal Railroad Administration.

The major recommendation was that FRA consider the development of a Basic Core Curriculum which would have universal applicability over the railroad system. This recommendation and the thirteen other research recommendations are now under review and consideration.

17. Key Words	18. Distribution Statement
Technical training; manpower development; railroad employees	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified		58	

Form DOT F 1700.7 (8-69)

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Over the last few years the Rail Labor-Management Relations Division of the Federal Railroad Administration has been working closely with railroad labor and management in efforts designed to improve rail economics, particularly with regard to productivity and labor-management relations. The procedure adopted by the Rail Labor-Management Relations Division has been to serve as a catalyst to help rail labor and management work together in a spirit of cooperation on problems of mutual interest.

One of the often mentioned sources of dissatisfaction from both rail labor and management has been the amount of training provided to railroad people and the quality of that training. It is widely believed that a well trained work force will result in increased productivity, and safer operations. Indirectly, the increased emphasis on training will instill motivation at all levels of employment.

In light of this, the Rail Labor-Management Relations Division commissioned a study by an independent consulting firm to examine industry training needs and problems and to outline possible research efforts which FRA could sponsor to address those needs and problems. The results of this study, which appear on the following pages, will assist the FRA in determining its specific role in relation to railroad employee training activities. However, it must be mentioned that the findings and views contained in this report are solely attributable to D. A. Stewart and Associates, Inc., the performing contractor. These findings and recommendations should be considered as the best professional judgement of Stewart and Associates. They should not be construed as declarations of FRA policy regarding railroad employee training.

It must be noted that Stewart Associates was asked only to define those areas in which FRA research can be helpful to both management and unions within the industry in the development of improved technical training for industry employees.

Future FRA policy decisions regarding railroad employee training will essentially rely on input from railroad labor and management. This report will assist FRA by acting as a discussion piece and a common reference document regarding railroad training efforts. In this context, it should serve as the necessary first step for FRA to determine its specific role in the training field. We welcome comments from all sectors on the contents of this study.

A. Introduction

The thrust of the recommendations from this study is that the Federal Railroad Administration should act as a facilitator and a provider of technical assistance to the railroad industry in its efforts to provide employee training. The railroad industry is unlike other modes of transportation where extensive government regulation and/or participation in the training of employees has been the practice. We feel the railroad industry enjoys a unique position in which regulation and extensive government participation is not required. This is not to say, however, that the Federal Railroad Administration cannot and should not provide extensive services to the railroad industry in its need for training personnel.

The decline in employment in the railroad industry over the past fifty years is a well-known fact. It is also significant that the railroads have suffered from a declining share of the total transportation market. While this is particularly true in passenger transportation, it is also true in the hauling and transporting of freight. There are indications that the trend of declining employment in the railroad industry will, in the near future, be reversed or at least level off as a result of a potential increase in traffic. Among the factors that will impact on the railroad transport business is the return to the use of coal as an energy source. In the next few years, this and other energy and environmental considerations could bring about a substantial increase in the demands for services from the railroad industry. This possible increase in demand will impact upon the railroads at a time when the present work force will, be seriously depleted and the industry will be facing further losses of workers through retirements. These facts will probably result in heavy demands upon the industry for new people to face a new volume of work. The needs for these people will place a serious strain upon the present methods of training employees within the railroad industry.

To the extent that it has been done, training of railroad employees has been accomplished by the industry itself. More specifically, programs have been customized to fit the needs of the individual railroads. The result is that there is a tendehcy on the part of those in the railroad industry to emphasize the differences in operations between railroads, rather than similarities. This has led to a feeling that traininq programs and training materials must be customized to fit the needs of specific railroads, and that there is little potential for the development of materials or delivery mechanisms that could be viable throughout the entire railroad industry.

To a major extent, this study and the recommendations which follow take exception to that premise. We feel that there are substantial numbers of similarities in practices as they exist on various railroads. Bv analyzing these similarities it would be possible for the railroad industry to develop a series of Basic Core Training Programs, each adapted to the commonalities that exist in performing work in the various crafts and occupational classifications. Our recommendations hinge around that concept of Basic Core Training Programs. We feel that the Federal Railroad Aministration can take a leading role in facilitating the development and implementation of programs of this type.

road unions, and public training agencies so as to encourage more public support in training of railroad personnel.

3. An outcome of the conference recommended in #2 above could be an FRA supported program to encourage and continue public support and interface in railroad employee training.

Category B: Generation of Information Necessary to Develop the Basic Core Training Programs.

4. A complete cataloguing and analysis should be undertaken of all existing training materials from selected railroads. This analysis would include an identification of the common elements in existing training materials and would include developing a basic training curriculum for one or more operating categories of employees.

5. A study should be undertaken to develop a system for estimating personnel replacement needs for one major railroad as a pilot for other railroads to follow. This pilot would include identification of all critical skills involved in running a railroad. It would further identify the number of personnel on hand and the number that will retire or be separated for another purpose over the next five years. It would also indicate the number of personnel that will be needed to be replaced. A timetable would then be developed for training requirements by category over the next five years. An estimate of the costs to do this will be included.

6. A study should be conducted to investigate, analyze, and determine the extent of the similarities among railroad operations as they relate to training content and methods.

7. A study should be undertaken to define, for railroad personnel in general and for each craft and occupational classification, minimum levels of skills required for job performance.

Category C: Development and Delivery of Basic Core Training Programs.

8. Steps should be taken to develop a Basic Core Training Program (BCTP) which would consist of a general program applicable to all employees in all railroads, combined with a series of BCTPs designed for specific crafts and occupational classifications in all railroads.

9. An analysis should be made of alternative programs of training on operating rules. This would include a pilot demonstration of the most likely methods. The study would focus upon both mastery of the subject matter (including meaning as well as rote verbalization), and developing a favorable employee attitude towards compliance with operating rules. The pilot demonstration would be directed toward assessing the relative impact of alternative training techniques.

10. A pilot demonstration should be conducted for retraining or updating employees in several crafts and should include skills, rules, and safety training. A survey of retraining needs and the development of an updating curriculuni needs to be done. A pilot group should be exposed to this updated training. The results should be evaluated by a survey of both the participants involved and their supervisors.

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CHAPTER II

BACKGROUND

A.   Recent Rail Developments

The railroad industry appears to be at a possible turning point in its need
for well-trained and experienced operational and support personnel. The fact
that there has been a sharp decline in the number of employees in the railroad
industry is well known. For example, the railroads today employ only 29 per-
cent as many people as they did in 1929 and only about 75 percent as many as
they did a decade ago.[1] At the present time there is significant evidence to
indicate that this lowered number of employees in the railroad industry will,
in the next few years, prove completely inadequate to meet the operational
needs of the industry. This evidence includes the United States Railway As-
sociation study of the bankrupt railroads of the Northeast and the Midwest.
That profile showed that, "of some 94,000 employees of the bankrupt railroads,
more than 30,000 employees or 36 percent of the work force will reach normal
retirement age of 65 between 1975 and 1985. If retirement becomes attractive
at age 60, then 54 percent of the work force will retire in this period."[2]
Further evidence is the 1975 annual report of the U.S. Railroad Retirement
Board, which indicates that of the engineers employed in 1974, 63 percent
were 50 years of age and over, and 43 percent were 55 and over.[3] Thus, re-
placing these engineers as they retire will require approximately 20,000
engineers to be trained. In general, then, it appears that current employ-
ment in the railroad industry is at a low level, with an alarming number of
those employees very close to retirement age.

This situation exists at a time when the railroad industry faces the potential
of a substantial increase in its work load or an increase in its share of the
transportation business. The declines in the number of personnel can be at-
tributed to many factors. For example, since 1929 the rail ton-miles have
increased. However, during the same period the railroad industry's share of
the nation's total freight transportation has dropped from 75 percent of the
total to 37 percent.[4] In short, increased competition from other transporta-
tion modes has made in-roads into the railroad industry's share. Other fac-
tors contributing to the decline in the number of employees have been the
sharp reduction in the passenger business, and the creation and use of larger
cars and longer freight trains. Obviously, much of the drop in the number of
employees since 1929 has been the result of increasing dieselization and other
technological advances of the railroads. With the replacement of steam engines
by technically more maintenance-free equipment, the former large maintenance
staff has been reduced.

There is significant evidence to indicate that during the next 15 years the
rail transport industry will be affected by many factors which will result in
substantial increases in the amount of freight and the amount of traffic
thrust upon the railroads. Not the least significant of these factors is the
energy situation and society's concern with environmental considerations. Es-
timates of railroad traffic forecasted for the year 1990 range from 1.1 tril-
lion ton-miles to 1.5 trillion ton-miles.[5] To offer some perspective, the
1976 figure was 791 billion, which showed a slight decrease from the 1973 and
1974 highs of 852 and 851 billion ton-miles respectively.[6] However, even con-
sidering the lower estimate, the growth in railroad traffic should be over 39
percent by the year 1990.

the operation and control of aircraft. These tests are preceded by specific training update requirements established by the Federal Aviation Administration. These personnel must be licensed by the Federal Aviation Administration. [8]

o The trucking industry does not have extensive training requirements monitored by a federal agency, but a state driver's license is a minimum essential. [9]

Historically, FRA has not been involved in regulating the training that is achieved within the railroad industry. This study does not address this issue. The recommendations that are set forth have been framed from the position of FRA not becoming involved in regulation. The industry concurs that the best path to solving the training problem is to promote a voluntary and cooperative program between railroad labor and management and government.

In the railroad industry a substantial amount of the current training is achieved under union contract agreements. The unions are heavily involved in training and are committed to apprenticeship or other forms of OJT. For' this reason, when we talk about the Federal Railroad Administration's role as a facilitator, we must not only think of their role as a facilitator with management, but also as a facilitator with 'the unions.

The main reason for union concern with training in the railroad industry has been the extensive use of the OJT and apprenticeship concepts in training. While all railroad training proqrams are not apprecticeship programs registered with the Bureau of Apprecticeship and Training, they do follow the traditional apprenticeship approach. In such an approach the unions themselves become active participants. This raises many questions of union/management concern. Among these are:

1. How is journeyman proficiency defined?

2. How is the relationship of wage rates and ratios of trainees to journeymen established?

3. Who does the training?

4. What is the length of training?

5. What is. the scope, sequence, and content of training?

6. What training methods are used?

7. To what extent can placement credit be given for related experience and knowledge?

With the widespread use of the apprenticeship method of training, the industry has become ingrained with the philosophy of learning by doing and with the custom of apprentices being taught by journeymen tradesmen, not by professional trainers. This tendency to rely on on-the-job training and the apprenticeship approach has evolved from labor/management relationships rather than from consideration of efficiency and effectiveness of training. Likewise, it has resulted in some situations where management initiatives in training have been

In a few instances we found that rules training for new employees was integrated into classroom training programs, such as those for locomotive engineers, signalmen, and trainmen. In other cases new employees were given the books of rules that apply to their particular occupational classifications. They were expected to learn the rules through self study and consultation with their supervisors on the job. The feeling was expressed that it might be desirable to develop a generalized set of rules that would apply to all operating personnel. It was acknowledged that this would be a considerable challenge and doubt was expressed that it could be done.

Technical job skills training was directed to the various crafts and occupations. It is, as previously indicated, very much influenced by the apprenticeship concept, and therefore, is highly decentralized. For the most part it's centered around the OJT concept, but there were exceptions. In discussing the problems of technical job skills training with industrial relations and personnel people, we concluded that in most cases they had little or no influence over how the training was conducted, when it was conducted, for whom it was conducted, and by whom it was conducted. There were cases where there was evidence of considerable interface and cooperation between personnel people and the operating personnel who conduct the training. However, it was obvious that the major responsibility and initiative for this training came from the operating departments.

C.   Future Training Needs

Both the current employment situation in the railroad industry and the increasing amount of business that can be expected in the next decade indicates a need for a relatively high level of training effort. In our survey of the eight railroads, we examined approximately 30 percent of the current employment in the railroad industry. The following figures cover only those trainees who are in the five technical and operating categories which we have identified as being the target of our study.

The eight railroads who report to have formal training programs, including registered apprenticeship programs, involve a total of approximately 4,900 trainees. It is significant that of these 4,900 trainees, 2,100 are reported as the total apprentice population in a traditional four year program sponsored by the mechanical department of one railroad. More than 1,200 of the 4,900 are reported as enrolled in the training programs provided by the one railroad having the centralized training effort. This indicates a rather sparse training effort directed towards meeting railroad industry projections concerning future needs. Those projections relate that as many as 200,000 new employees will require training to meet the needs of the railroad industry in the next decade.

In viewing the figure of 4,900 trainees, one must also consider that there was duplication of training reported. For example, we found that personnel who were reported as participating in a locomotive engineer training program were sometimes reported as participating in a fireman training program. That leads us to suspect that the figure 4,900 trainees is inflated. It is also significant that the 2,100 trainees reported by that one railroad includes persons in a four-year program. That figure, therefore, translates to approximately 500 trainees per year. The 1,200 trainee figure is an annual figure. It seems logical to assume, then, that these eight railroads are graduating no more than 3,500 trainees per year. If the eight railroads represent one-

FOOTNOTES

1. Economics and Finance Department, Association of American Railroads, Yearbook of Railroad Facts -- 1977 Edition (Washington, DC: Association of American Railroads, 1977), p. 57,

2. Transportation Research Board National Academy of Sciences, Rail Transport Research Needs Special Report 174 (Washington, DC: National Academy of Sciences, 1977), p. 36.

3. U.S. Railroad Retirement Board, Statistical Supplement -- 1975 Annual Report (Chicago: U.S. Railroad Retirement Board, 1976), p.63/

4. U.S. Department of Transportation, National Transportation Trends and Choices (Washington, DC: U.S. Government Printing Office, 1977), p. 182.

5. Transportation Research Board, Rail Transport Research Needs, p. 9.

6. Association of American Railroads, Yearbook of Railroad Facts -- 1977, p. 29.

7. United States Department of Commerce, Maritime Administration, Particulars Regarding Employment in the U.S. Merchant Marine, MA-FL-92 (Washington, DC: 1976), p. 1.

8. U.S. Department of Labor Bureau of Labor Statistics, Occupational Outlook Handbook, 1976-1977 Edition (Washington, DC: U.S. Government Printing Office, 1976), pp. 279-285.

9. Ibid., pp. 311-313.

10. Transportation Research Board, Rail Transport Research Needs, p. 36.

CHAPTER III

GUIDELINES FOR FRA TO SUPPORT AN
OPTIMUM TRAINING PROGRAM

A. Summary

The principal thrust of our recommendations is that the Federal Railroad Administration take an active role in promoting training of railroad operating and maintenance personnel. This role should, however, be restricted to a facilitating role rather than an active participation in either presenting training programs or establishing formal training program requirements as is done by regulatory agencies in other transportation modes.

Our recommendations resulting from this study are fourteen in number and are discussed in detail later in this report. However, we do see one of those recommendations as being a keystone for FRA support. We believe that the central thrust of FRA's efforts to facilitate improved training of railroad personnel should focus upon a Basic Core Training Program (BCTP). We envision the BCTP to consist of a general introductory program applicable to all employees in all railroads, combined with a series of Basic Core Training Programs designed for specific crafts and occupational classifications in all railroads. All other recommendations are either directly supportive of this keystone recommendation, supplemental to it, or an outcome of it.

The rationale for the BCTP is based upon the premise that there is a considerable body of knowledge, skills, and abilities that is common to the operations and work in the field of railroading. Further is the premise that within each of the many identifiable crafts and occupational classifications there are also elements of commonality in knowledge, skills, and ability requirements.

During the course of our survey of the eight railroads there was a tendency on the part of some personnel to emphasize the differences between railroad operations rather than discuss the many areas of similarity. However, the first step toward building a Basic Core Training Program requires the identification of those areas of similarity. The next step is the classification of the areas in which BCTPs can be developed. The third step is the development of a branching system that will facilitate the logical progression of training through all or part of the BCTPs as the requirements of the craft and occupational classifications dictate.

In addition to the problem of building content of the BCTPs, the Federal Railroad Administration must give careful consideration to the problem of packaging the materials. The differing kinds of training facilities, the wide geographical dispersion of the operations as well as the personnel of any railroad, and the differing organizational arrangements through which . training can be offered all dictate the development of a flexible program delivery mechanism that can be adapted to a variety of situations. Furthermore, the railroads themselves may not be the only organizations that can or will use these BCTP materials. We anticipate increasing interest in railroading on the part of community colleges, vocational/technical schools, and other public training agencies.

Railroad:
Specific

Craft A
  1. technical skills
  2. operating rules
  3. safety

Craft B
  1. technical skills
  2. ooerating rules
  3. safety

Craft C
  1. technical skills
  2. ooerating rules
  3. safety

Craft 3
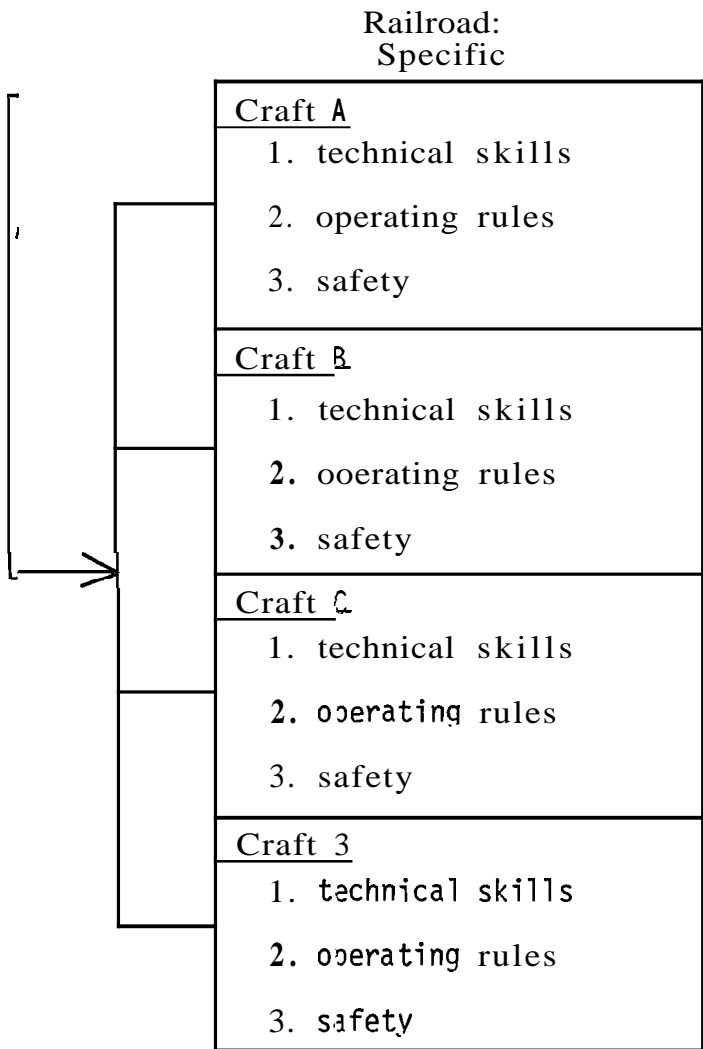 1. technical skills
  2. ooerating rules
  3. safety

FIGURE III-1

15

programs could be developed. For each craft, the Basic Core Training Program would be divided into three specific areas of training, namely:

1. The technical skills necessary to perform that occupation.

2. The operating rules applicable to that occupation.

3. The safety principles applicable to that occupation.

For each of these training areas, the principles and content that are uniform throughout the railroad industry, that is, the similarities. would be emphasized. Therefore, for occupational classification or Craft A, (a) the technical skills, (b) the operating rules, and (c) the safety principles that are important and uniform throughout the industry would be identified and developed into three training modules of the Basic Core Training Program, and each module would contain from two to several integrated lessons. This modular approach allows a high degree of flexibility in terms of how, of when, and to whom materials are presented. A trainee who enters the BCTP at Occupation A, for example, may have already demonstrated proficiency of certain technical skills in the Occupation A BCTP. Therefore, he or she would be able to skip lessons in the Technical Skill module for Occupation A. On the other hand, a new hire who is entering the industry directly into Occupation A would probably need to study all of the lessons in the module on technical skills. The same procedure would be followed for the modules concerning operating rules and safety training.

On the right side of Figure III-1 is a repetition of the components found in the center BCTP. This is illustrative of the training materials that would be "railroad specific," that is, materials designed to extend the fundamental training of the BCTP to the specific needs of single railroads. This strategy allows two basic approaches to the use of the BCTP concept. In the first approach a trainee may enter the proaram at, perhaps, a central all-railroad training academy and take the BCTP for a given craft. When that trainee is hired, the employer railroad might direct him or her for further training in the form of courses which would add on to the fundamentals he or she learned in the BCTP. On the other hand, if the trainee is also a new hire and participates in a BCTP provided by a specific railroad, the railroad's trainer would use the fundamental BCTP materials and fold in the railroad specific information, immediately adapting the basic material to meet the specific needs of the employer railroad.

The FRA objective, of course, would be concentrated upon providing facilitating services to develop the basic program materials that are common to all railroads.

2.   Illustrations of Work Being Done

During our visits to the eight railroads, we uncovered several trainina courses germane. to the development of Basic Core Training Programs. For example, we investigated the program developed by the Brotherhood of Railway, Airline, and Steamship Clerks. The program, operated through the Job Corps, trains people for the general clerical occupations within the railroad industry. One of the first steps that BRAC found necessary was to develop a unit for training

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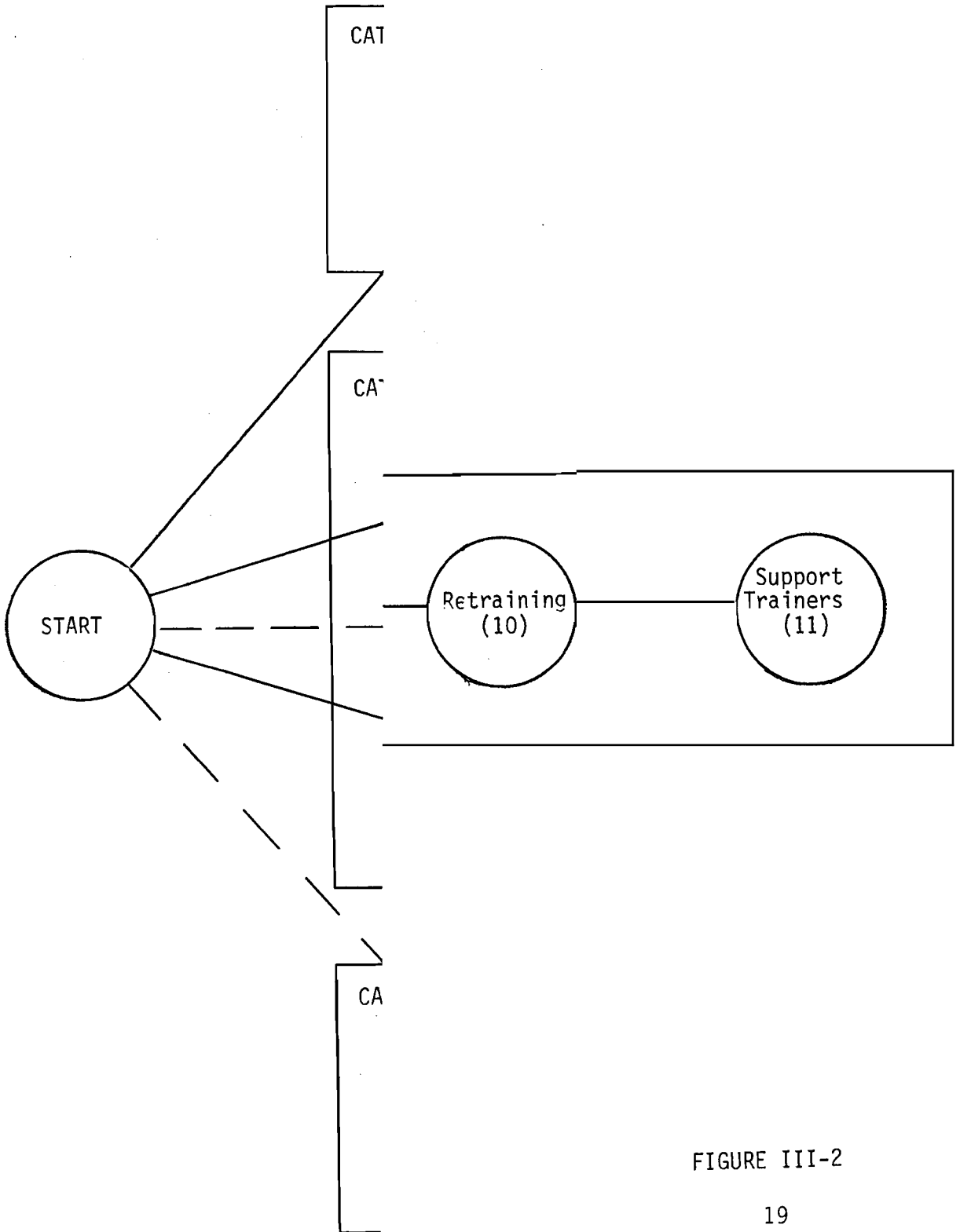CA

START

Retraining
(10)

Support
Trainers
(11)

CA

FIGURE III-2

ing effort through a multiplicity of publicly funded programs and agencies. Through many years and with different administrations, the Office of Management and Budget and the Congress have attempted to promote the idea of interagency cooperation and coordination to gain the most possible benefits from job training programs. It is our recommendation that FRA can act in the interests of both the public at large as well as the railroad industry by continuing efforts to facilitate and encourage interagency cooperation for railroad employee training.

Encouraging interagency cooperation should be supportive of the BCTP concept. As noted in Section B-2 of this chapter, there are several publicly supported programs through which BCTP materials are currently being developed. These efforts can and should be nurtured and promoted.

The four recommendations included in Category B are all supportive of the development of BCTPs. The first of these is Recommendation #4, the cataloging and dissemination of existing training materials and training aids. During our survey of the eight railroads we were exposed to a large volume of training materials. Again, it was not within the scope nor the objectives of our study to evaluate these materials. However, we observed that a sizeable amount of material exists and much .of it is very good. Prior to any effort to develop new materials,, some effort needs to be expended to collect, catalogue, classify, and analyze this wealth of materials. As illustrated in Figure III-2, this catalogue of training materials could impact directly into Recommendation #8.

A major problem in accomplishing this recommendation is to identify the specific crafts and occupational classifications where training is needed. Recommendation #5 involves the development of a system for estimating personnel replacement needs. At the present time there are 128 job categories classified and numbered by the Interstate Commerce Commission. Many of these classifications no longer exist in the industry. Others exist in numbers too small to warrant serious consideration in the development of training programs. While the ICC and the industry have long recognized the fact that the ICC job classification system is outdated, little has been done to correct it.

Recently, the Association of American Railroads proposed to the General Services Administration a "career path" for employees, in compliance with Equal Employment Opportunity requirements. The report may be useful for our purposes in defining duties, union affiliations, and promotional opportunities for training purposes. Vocational education institutitions have been using a system of job cluster training. The basic procedure involved in this system is to analyze a variety of jobs to determine those that cluster together as a result of inherent common skill requirements. Following such an analysis, curriculum planning is accomplished by constructing modules of formal courses which can be used to build training programs for specific .jobs within the cluster. The system of job cluster training also permits the planning of broader based programs which are designed to give the trainee a higher degree of mobility in basic skills to meet the minimum requirements for any job within a cluster. This system should be considered to determine whether or not the concept could be applied to railroad industry training.

With an improved classification system and better defined "career paths," the industry could improve its efforts to identify the concept of the BCTPs. By adding a quantitative component of personnel needs, some estimates of the magnitude of training effort by category would be possible.

need for retraining engineers, conductors, and switchmen/brakemen who are concerned with human life is greater than a maintenance of way laborer. The need for retraining on operating rules is directly proportional to the need for initial training. Again, an engineer bas a far greater need for rules retraining than does a carpenter, and the need for safety principles retraining is more widespread than the need for retraining in operations. Most occupations on a railroad have considerable need for the practice of good safety principles.

Flexibility and a modular approach have been emphasized in our approach to the BCTPs. The question of who does this training becomes important. For some occupations only a minimum amount of formal training is required as a prelude to on-the-job training. For other occupations more extensive formal training is required because of the risks associated with on-the-job training. Attempts should be made to assure that trainers use the best professional instructional materials. This is true, regardless of whether or not the training is done by a teacher in a formal classroom situation or by a supervisor or journeyman on-the-job. For this reason we include a train the instructor component in Recommendation #10.

The recommendations included in Category D are supportive of the main thrust of the BCTP concept. They are recommendations that should be given careful thought and consideration by FRA. They represent process issues that should be addressed.

Recommendation #12 concerns the issue of centralized vs. decentralized training functions. Training responsibilities in the railroad industry are extremely fragmented. Other industries have found that centralized training is more efficient and cost effective. FRA should encourage and support research on this issue. This is particularly important if the BCTP concept is adopted.

Recommendation #13 relates to a trainee wage scale. If training programs were centralized into a formal training center, it is possible that this issue might be addressed on a uniform basis. However, we are aware of the fact that this is an extremely sensitive issue that impacts upon many different union/management contracts.

Recommendation #14 relates to the feasibility of establishing national or regional training centers for the railroad industry. If Basic Core Training Programs were developed, this might be a feasible approach to delivery of training services. Conversely, if such centers were established prior to the development of BCTPs, they would most certainly need to develop such core programs as a first order of business.

C. Determining Levels of FRA Support

1. The Role of FRA

We recommend strongly that the FRA role be one of facilitator to railroad craft and skill training rather than becoming involved in the administration or regulation of training. In this facilitating role, we see the potential for FRA to encourage and endorse the railroad industry in its efforts to obtain support from public training sources. In addition, we see the potential for FRA to play a significant role in ⟂he development of specific training materials that can be used by the industry at large. Lastly, we recommend that FRA support the establishment of a clearinghouse for information and technical assistance

development of Basic Core Training Programs at specific vocational and technical schools. These kinds of actions would need to be initiated by the vocational schools and probably proceed through the individual state's vocational education plan. With proper encouragement and support from FRA, specific Federal vocational education funding to the institutions might be possible.

Not only might this interface with public institutions prove successful, there are also other circumstances where Basic Core training materials could be further developed within specific railroads. The problem of identifying that material and making it available would be a worthwhile project for specific crafts and occupational classifications. We see a problem area within the area of operating rules and safety training, where there is much that can and should be done. One major problem is the tendency to conduct rules training by memorization and rote rather than through the techniques of simulation and conditioned response that are used in other transportation modes. For example, in the airline industry the training techniques for safety and operating rules involve the pilot being put into a simulator with sets of safety or operational problems presented to him. The pilot is judged on the validity of his or her reaction to the stimulus that is presented. In the course of our studies we saw few cases in which this is being done.

A maximum level of FRA support would involve FRA standing behind the support projects in Category D. In this area there are some difficult problems that would need to be overcome and there is some question as to how far FRA would want to proceed. Without strong FRA initiatives, these problems might inhibit the accomplishment of the objectives implied by the recommendations in Category D. For example, the question of centralized vs. decentralized training organization would involve a study and evaluation of training operations in specific railroads. Further, the analysis of need for training wage standards is wrought with serious union considerations. The analysis of the feasibility of single or regional training centers raises the major issues of who would run the training centers and whether or not such centers might be contrary to our recommendations of FRA maintaining itself in a facilitating role. Yet, analysis of each of these recommendations is needed to insure the smooth and efficient utilization of the BCTPs.

These illustrations indicate the various options that FRA might consider in terms of categorical assistance and, from that standpoint, define the potential level of effort in terms of selection from among the various recommendations.

3.   Selecting Options of Choosing Crafts and Occupational Classifications
       to Include in the BCTP

It might be conceivable that FRA could decide to control its level of effort by not using the selection of options among the recommendations, but rather centering their program around the crafts and occupational classifications which would be included in the Basic Core Training Program. To illustrate, it is conceivable that one or two occupations within the three basic classifications would be selected as the occupational classifications for which Basic Core Training Programs would be developed. With this selection it would be possible to concentrate all action in relation to all recommendations to specific occupations. In short, you would not eliminate or cutdown on effort in connection with any categorical area, but rather limit the project on the basis of the number and types of occupations which are included.

or the work environment. The type of guidance provided in the instructor's manual is particularly suited to the needs of the railroad industry. We recognize that much training will, of necessity, be continued on a decentralized and sometimes on-the-job basis. The methodology, along with the specific guidance material presented in the instructor's manual, provides a system whereby structured training can be accomplished in the decentralized environment.

The instructor can sequence modules as he or she chooses. The instructor may sequence the modules to directly relate to a trainee's on-the-job work schedule. Further, the instructor may delete modules which teach skills a trainee has demonstrated proficiency in, or modules the instructor feels are not necessary or relevant to the work environment.

Materials offered by this methodology can be administered to a group of trainees in a classroom situation or administered to one trainee in a self-paced modified self-instructional format. The media modules can be sent to any remote location on a railroad. With the aid of the instructor's manual, any supervisor or journeyman can successfully fulfill the role of instructor. And the required media equipment, a slide projector and bape player or video bape monitor, are readily available.

D.   Factors Impacting on Training Requirements

In making an assessment of the desired level of support for employee training, FRA needs to consider the potential impact of several factors. These factors include environmental and energy concerns, technological and financial considerations, and mandated social reforms.

That we live in an era in which technological change is the rule is an accepted reality. This changing technology affects the natural and the social environment. How work is done, who does what work, and where work is done, and the conditions under which work is done are of great and immediate concern to all employees in the railroad industry.

The last several years of financial hardship have resulted in deferment of expenditures on maintenance of equipment and of right-of-way property. Studies have been done to estimate the magnitude of this problem. However, the estimate of the magnitude of the problem needs to be translated into numbers of trained workers that will be required to accomplish planned maintenance activities.

Like most American business organizations, the railroads face compliance with Equal Employment Opportunity requirements. While the administration of EEO is not a responsibility of FRA, the nature and extent to which the railroad industry musb move to be in compliance is an important influencing factor upon railroad employee training. EEO could be a determinate of the timing, the content, the coverage, and methods to pursue in railroad employee training.

The extent to which these factors might impact upon FRA's decision concerning levels of support must be considered. As a guideline to FRA, we suggest the following outline of questions which FRA should consider.

5. Will the trend toward automation continue and/or grow in the railroad industry?

6. Which employee classes or crafts will need training in the advanced technologies?

7. Who will provide technological update training, manufacturers of equipment, the railroads, vocational/technical schools, the unions?

C. Mandated Social Reforms

EEO Compliance:

Recently, the railroad industry has been under increased pressure to improve their record of compliance under EEO laws. Assuming that the pressure on railroads to comply with EEO requirements will continue or will be increased:

1. What can be done to encourage railroads to train'employees for upward mobility within their particular class?

   a. What can be done to retrain employees in different skills?

2. What can be done to encourage free movement of employees between classes and crafts after they have taken training in these other fields?

3. In those geographic areas where railroad employment is concentrated, can public and private vocational schools be encouraged to provide pre-employment training in the various skills required for railroad employment?

Employment of the Handicapped:

Federal law prohibiting discrimination in employment has been extended to cover the physically and mentally handicapped. Assuming the railroads are making an all-out effort to comply with this law:

4. Can adaptions be made in present training facilities to accommodate the needs of the handicapped?

5. What can be done to assist the railroads in determining how specific handicaps can perform specific types of work?

6. Are training programs which are dsigned to teach non-handicapped employees how to deal with their handicapped fellow workers feasible or necessary'!

ACCESS TO FINANCIAL SUPPORT

A. Description

The objectives of the category of the three recommendations concerning "Access to Financial Support" are (1) to familiarize the railroad industry with various public sector training programs and potential sources of public funds; and (2) to assist the railroads in investigating more effective methods of drawing upon existing public sector programs to support and augment their current training needs as well as future training requirements.

To accomplish these objectives, FRA has planned a workshop tentatively scheduled for early 1978. Incorporated in the program of the workshop will be case studies illustrating how successful interface between public sector education and training agencies and the railroad industry has been achieved. It is anticipated that key personnel representing the agencies of CETA, Vocational Education, WIN, Job Corps, and the Bureau of Apprenticeship and Training will meet with representatives of railroad management and the unions to discuss how their programs can assist the railroad industry in its training efforts. At this conference, representatives of the railroad industry will have an opportunity to confer directly with the representatives of the public sector to express the training needs of the industry.

The category of Access to Financial Support should not be a one-time effort. It should be a continuous support service that dispenses to the railroad industry information to aid them in linkina with current or future public sector programs that will assist and support the industry in their training efforts.

To successfully fulfill the first objective of the Access to Financial Support category, that is, to familiarize the railroad industry with public sector training programs, we recommend three specific tasks. The first task is to analyze a limited number of successful interfaces between the railroad industry and publicly supported training efforts and develop the data into appropriate case studies. The second task is to conduct a conference to disseminate information to the railroads about current and available public sector training and support programs. The third task is to establish a method to keep the railroads abreast of information concerning available public funding.

1. Case Studies

The first task in the Access to Financial Support category is to develop several case studies concerning successful interface between the railroad industry and publicly supported training efforts. The development of these case studies would require an analysis of those "marriages" in sufficient depth to determine the reasons why the interface was successful. It would focus upon agency or industry constraints as well as those problems inherent in any interface. The case studies would examine how those problems were overcome to allow the railroad industry access to publicly supported traininq efforts.

The majority of railroads have not had a history of success in interfacing with public sector funding. However, since some railroads have had successful interface, it is important to determine the ingredients for those successes.

3. Bureau of Apprenticeship & Training
   (U.S. Department of Labor)

4. Community and State colleges
   Credit Courses
   Evening & Extension Programs

The conference will include the presentation of the case studies developed in Part 1. It will also include presentations by representatives of the various appropriate government agencies discussing some practical methods and procedures for interface between the agencies and the railroad industry. An important aspect of the conference will be workshop sessions which will allow considerable dialogue between the Federal agencies and the railroad industry. Some of the specific areas that will be covered in the workshop sessions will be:

1. Identify problem areas between the railroad industry and various government agencies.

2. Present recommendations for resolution of identified problem areas.

3. Identify the potential for interface of existing programs sponsored by the various agencies and the railroad industry so that railroad needs might better be served.

4. Develop recommendations and/or guidelines for obtaining desired interface of the various government agencies and the railroad industry.

3. *Continuing Action Program on Access to Financial Support*

From time to time additional information concerning public funding and public support programs will become available which will be important to the railroad industry. A clearinghouse needs to be established to provide a continuous flow of new and relevant interface information. Without a continuous supply of ever current data, the potential for an on-going industry/government relationship will die.

B. Findings on Access to Financial Support

In our survey we identified three major public sector programs which interface with railroad training departments. They are:

1. CETA (Comprehensive Employment and Training Act).

2. Vocational and technical schools,

3. BAT (Bureau of Apprenticeship and Training, U.S. Department of Labor).

D.   Industry Responsibilities in Access to Financial Support

Each level of effort developed in this study is either preparatory to or sup-
portive of the actual development of the BCTPs. While we feel that FRA
should act as a catalyst or facilitator to the development of the BCTP con-
cept, both railroad management and union management must take an active part
in the BCTP development.   The immediate responsibility of the railroads and
the unions is to actively participate in the conference.   There is oppor-
tunity for public sector assistance but achieving it will require dedication
and effort on the part of the railroads and the unions.

There are three additional categories in the total BCTP program encompassing
the balance of the fourteen recommendations.   It is unlikely that the industry
will progress further than the first area completely on its own.   As a facili-
tator and catalyst, FRA is necessary for the railroads to pursue the three
additional categories of this program aggressively.

GENERATION OF INFORMATION NECESSARY
TO DEVELOP THE BASIC CORE TRAINING PROGRAMS

A. Description

The development of any basic core training program will, of necessity, need to be built upon certain foundations of factual information. The second category of recommendations to FRA includes basic steps that are necessary to generate information and to plan BCTPs. These are four in number:

> *4. Catalogue and analyze existing training materials from selected railroads.*
>
> *5. Develop a mechanism through which personnel replacement tables can be established for individual railroads or for the railroad industry as a whole.*
>
> *6. Analyze the similarities in technical skills, operating rules, and safety principles among the railroads.*
>
> *7. Establish minimum requirements for technical skills by craft and occupational classification.*

4. Catalogue and analyze existing training materials for selected railroads.

There is a substantial amount of materials in the form of books, slide/tape presentations, video tape presentations, correspondence courses, and the like that is already in existence. There has been one attempt to catalogue such material bv the Railway Safety Board. However, the cataloque is limited to safety training materials.[1] There was no attempt made to analyze the cataloqued materials.

There is a need for a central library of existent training materials. In addition to collectinq this material in a library, there is a need to cataloque, classify, and analyze it. The material should be analyzed to identify the common elements by class and craft. Any attempt to develop a Basic Core Training Program without first conducting this cataloguing and analysis function would be folly. The cataloguing of existinq training materials is one of the most important tasks in the generation of a BCTP. It is a prerequisite for analysis of similarities and differences of railroad operations and is fundamental to the establishment of requirements for technical skills by craft and class.

Considering the magnitude of this task, thought must be given to the quality, accuracy, and validity of the materials. Consideration will need to be given to the scope of material, the sequence, and the universal application among the railroads.

5. Develop a mechanism through which personnel replacement tables can be established for individual railroads or for the railroad industry as a whole.

7. *Establish minimum requirements for technical skills by craft and occupational classification.*

Assuming that a workable job classification system can be identified, the minimum levels of skill necessary to perform each job within the classification system could then be defined. These job and skill definitions would be of inestimable value to those responsible for developing the specific Basic Core Training Programs for individual crafts and occupational classifications. It is particularly important that labor and management be brought in to determine the particular minimum skill levels.

B.   Findings

4. *Catalogue and Analyze Existing Training Material for Selected Railroads.*

There is a tremendous amount of training materials within the railroad industry. The existent training materials are in the form of books, handout sheets, slide/tape presentations, video tape presentations, and the like developed by individual railroads, furnished by manufacturers of equipment, and available for purchase from outside sources.

It was not within the scope of our project to assess the quality of this material or to make any judgments as to its effectiveness. However, it was obvious from a cursory examination of selected materials that the quality varied tremendously from item to item and from railroad to railroad.

We did not find a central library of software in any of the six decentralized training organizations. Nor could we locate a comprehensive listing of available training materials in any of the six decentralized training organizations. However, we found two cases in which a department within a decentralized railroad was marketing media programs by direct mail promotion. In both cases the response of the industry to the programs was minimal.

We found little uniformity regarding the training methodologies employed among the decentralized railroads. Yet there seemed to be an awareness of which training methodologies were most successful for which skills. We also found cases where training materials were existent but not readily available to employees.

5. *Develop a Representative Personnel Replacement Table.*

A personnel replacement table should show all operations and skills necessary to operate a railroad and the number of employees needed in each category. It should project retirements and include some estimates of normal separations for other reasons (such as disabilities, voluntary separations, and the like), determined by historical evidence. It should also indicate how many of the retiring or separating employees will need to be replaced under normal conditions. From this, one can extrapolate employment requirements for each of the next several years by operating category. This information was not available to any of the training directors in any railroad that we interviewed.

On one railroad we found that a complete analysis of employee age and retirement status had been done two or three years ago. However, the information had not been kept up-to-date. We found no evidence in any other railroad that sort of similar analysis was done on a continuing basis.

(1) cataloguing and analyzina existing training material; (2) developinq a personnel replacement table; (3) analyzing similarities in technical skills, operating rules, and safety principles; and (4) establishing minimum requirements for technical skills by craft and occupational classification. The approach should be horizontal in the sense that task (1) cataloguing and analyzing; task (3) analyzing skills similarities; and task (4) establishing minimum requirements would be done for all crafts and occupational classifications necessary to operate a railroad.

Another strategy that FRA can take to generate the information might be to take the vertical approach noted above, combined with a modified horizontal tack. Instead of accomplishing tasks 1, 3, and 4 for all crafts and occupational classifications necessary to operate a railroad, FRA could choose selected skills for which these tasks might be accomplished. for example, locomotive engineers, signalmen, and brakemen/switchmen.

D.   Industry Responsibilities

It is essential that the railroad industry participates in the tasks involved in the generation of information necessary to develop the BCTP.

Industry responsibilities in cataloguing existing training material will require a minimum amount of effort. The primary industry task will be to make available copies of the training materials. Analyzing the material in terms of quality, accuracy, validity, and scope and sequence will require active cooperation by both the railroads and the unions.

The analysis of the similarities in technical skills, operating rules, and safety principles will require dedicated activity by both the railroads and the unions to achieve a valid set of data that will be accepted by the majority of the industry. The development of minimum reauirements for all of the various technical skills by craft and occupational classification will require attention to detail and close cooperation by both the railroads and the unions to successfully accomplish the information necessary to develop the Basic Core Training Program.

CHAPTER VI

DEVELOPMENT AND DELIVERY OF BASIC CORE TRAINING PROGRAMS

A. Description

Development and delivery of the Basic Core Training Program is, as previously indicated, the keystone recommendation of this study. Other recommendations are either prerequisite to or supportive of the BCTP concept. The category of recommendations discussed in this Chapter are those directly involved in development and delivery of the Basic Core Training Program. They include:

> *8. Develop Basic Core Training Program.*
>
> *9. Develop alternative methods for training on operating rules.*
>
> *10. Develop retraining programs for BCTP including technical skills, operating rules, and safety principles.*
>
> *11. Develop support programs for instructors.*

8. Develop Basic Core Training Program

The rationale for BCTPs, their operational character, and their interrelationship with other recommendations has been discussed in Chapter III. This Chapter addresses process issues and recommendations.

The options among the recommendations that FRA and the industry may select to act on will be a major determinant of the process that will be followed in developing BCTPs. As indicated in Chapter III the ideal model would be a step-by-step process involving the achievement of Recommendations #1 through #7 in sequential order. The accomplishment of the ideal model would provide a complete foundation upon which to build the BCTPs. Within some crafts and occupational classifications this approach may not be necessary.

As previously indicated, there are areas in which work has already been done. Therefore, another approach or process would involve the identification, selection, organization, and packaging of existing materials into the BCTP format.

A practical concern is the recognition that there will need to be several different approaches to developing BCTPs. In crafts and occupational classifications where little or no training materials have been developed, a sequence through all seven support and developmental steps may be necessary. In other instances, various levels of effort will be required to tailor and adapt existing training materials into the BCTP concept.

In addition to the content and coverage issues, consideration must be given to the method of delivery of BCTPs. As previously indicated, the geographically widespread operations of the railroad industry create a need for a flexible approach to training program presentation. Modular presentation of content, extensive use of multi-media methods, and adaptability of the

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There is a considerable body of knowledge relating to training instructors that can be applied to support instructors at both extremes as well as the spectrum of instructors between the extremes.

B.   Findings

8.   *Develop Basic Core Training Programs*

The railroad industry is unique among American industries. It is composed of a large number of companies, some very large, some medium size, and some very small.   The industry has companies that are very profitable, some that are marginally profitable, and some that are bankrupt. It includes companies that do not compete because of geographic location and companies that are highly competitive.   Unlike other American industries, the railroad industry must operate smoothly, operate like one massive corporation.   Every piece of rolling stock must be physically able to run on all existing tracks. The equipment must be similar enough so that employees of every railroad can operate it.   And the various companies in the industry must have close working relationships because one customer's freight shipment may transit several railroads before reaching final destination.   The uniqueness of the railroad industry is that on the one hand individual railroads must fight for a market and compete like other industries.   On the other hand, individual railroads must work together as one massive system.

During our survey we found little indication that this systems concept carried over to the considerations of the content of training programs.   However, we did attend two meetings of the Training Section of the Railway Personnel Association.   We also discussed training methodologies and philosophies with executives and representatives of the eight railroads.   We discovered that there is a healthy interest among the training people in the methodologies currently being used.

One of the past chairmen of the Training Section of RPA mentioned that at one time there was a proposal made to catalogue all existing training materials. However, the question of who would do it, who would finance it, and where it would be done was unanswered and the project was dropped.   As we see it, the problem is not the lack of interest in the industry in training methods, but rather the reluctance on their part to talk about commonalities in the content of training programs.

This problem is probably accentuated by the fact that railroad industry training directors are generally not responsible for content of technical skills training programs.   With one, two, or possibly three exceptions, the training directors with whom we talked were essentially interested in supervisory1 management training.   They limited their interests in skills training to problems of developing media, scheduling programs, and like considerations. The major responsibility for determining the content of training materials was highly decentralized in the operating departments and was, in general, a product of the on-the-job training philosophy prevalent in technical skills training in the industry.

9.   *Develop Alternative Methods for Continuing Training on Operating Rules*

During the course of our survey of the eight railroads we found that operating rules training is limited to requiring the employee to learn the rules

There was, however, a notable lack of any substantial information on programs conducted to upgrade the technical skills of personnel within any occupational classification. There were references made to the fact that employees in certain crafts might be sent periodically to the Westinghouse Airbrake school, that others such as locomotive engineers may have attended seminars or courses conducted by GE or EMD. There was little evidence of any planned program to do substantial retraining of technical skills on a regular or continuing basis. Furthermore, we did not see any formal procedure in place to identify the areas in which technical skills might require upgrading.

As previously indicated, several of the railroads have developed multi-media presentations for technical skills upgrading. In one case this was accomplished with video tape modules, in others with slide/tape presentations.

11. Develop a Support Program for Instructors

Training directors have a formal working relationship within the Training Section of the Railway Personnel Association. The topics discussed in the interpersonal communication which takes place at the meetings of this Association provide a valuable forum through which training specialists in the various railroad companies can meet, compare notes, discuss programs, and exchange ideas. With these professional instructors, there is little problem in terms of support.

The problem that does exist is that the majority of the actual technical training on the railroads is done on a highly decentralized basis in the shops and in the field. The instructors who run these programs are generally craftsmen or supervisors who have either a liking for instructing, or who have demonstrated some interest or competence as instructors. However, they do not have formal training as instructors nor do they have much in the way of media and method support to aid and assist them in their instructional role. It is among this class of trainers that train the instructor support programs are needed.

There has been some discussion of this topic during at least one meeting of the Training Section of the RPA. We also observed at least two instances in which companies did have some programs for training instructors. However, providing substantial support material to those who are doing the bulk of the technical training in the field continues to be a major problem.

C.   Priorities for FRA

As previously indicated, the BCTP concept is the keystone recommendation of this study. It follows, therefore, that the priorities which FRA attaches to that recommendation will be a factor in determining the priorities attached to other recommendations. There are several options from which FRA can choose in selecting a level of effort for Recomnendation #8: Develop Basic Core Training Program. These include:

1.   Select from Recommendations #1 through #7 levels of effort that would provide input for and incentive to others (such as railroad companies, unions, vocational schools, or other training agencies) to develop and deliver Basic Core Training Programs.

2.   Select specific crafts and occupational classifications and provide support for the development of BCTPs for those classifications.

From the outset of this study we adopted a principle that FRA can and should help the railroad industry in its training effort, However, we have warned that the industry does not need regulation of its training activities. For this reason, then, recommendations relative to developing new procedures and methods for operation rules training and for retraining must be given special consideration by the railroad industry. Major initiatives for improving rules training and retraining activities must come from within the industry.

DEVELOPMENT OF SUPPORT PROGRAMS

A. Description

Previous recommendations have covered the categories of (A) Problems of access to financial support; (B) Generation of information necessary to develop the Basic Core Training Programs; and (C) The development and delivery of the Basic Core Training Programs. The content of the final set of recommendations is the development of a set of supplementary recommendations which will reinforce and support the other three categories. There are three recommendations in this phase. They are:

> 12. *To analyze the benefits of centralized vs. decentralized training organizations.*
>
> 13. *To analyze the need for trainee wage standards.*
>
> 14. *To analyze the feasibility of national or regional training centers.*

12. Analyze the Benefits of Centralized vs. Decentralized Training Organizations

For the most part, the railroad industry operates with a highly decentralized training responsibility. In large measure this is due to the fact that individual railroads cover large geographical territories and are therefore subject to decentralization in most of their operations. The railroads have responded to this problem of decentralization by relying heavily on the content of on-the-job training, usually implemented through apprenticeship programs.

There are many advantages as well as disadvantages to both the centralized training organization and to the decentralized structure that exists in the railroad industry. While the trend in most other industries has been toward more formalized, structured, and centralized training programs, the question of whether or not this concept would be most beneficial and effective within the railroad industry should be investigated in some detail.

Within the eight railroads surveyed there is one company that has a highly centralized training organization, while two other companies have partially centralized training functions. Considerable differences exist among the railroad people as to which of the organizational structures is most beneficial. The railroad having the highly centralized training organization has collected a considerable amount of data to support their position that there are dramatic cost benefits from a centralized organization. No such detailed cost data was available from the other railroads.

For this reason, we recommend an analysis to study the benefits that can accrue from centralization of training responsibilities. Such a study would take into consideration not only the cost data that could be made available, but also some analysis and evaluation of the effectiveness of training under centralized as well as decentralized training conditions. While this would

All of these potentials should be investigated. The cost of building such training academies is substantial. Yet, if serious consideration is to be given to centralized academies, the industry should be aware of the financial and technical assistance available and what the potential is for industry cooperation to develop an academy concept.

B. Findings

1. Analyze the Benefits of Centralized vs. Decentralized Training Organizations.

The railroad training that we observed can be classified into five broad categories:

1. Administrative and Clerical

2. Superivsory and Management

3. Technical Skills

4. Safety

5. Operating Rules

In each of the eight railroads the administrative and clerical training as well as the managerial training were the responsibilities of the training directors. In all railroads, safety training was centralized within the safety function. In all railroads the safety functions was the responsibility of the personnel directors or the industrial relations directors but the training aspects of it were independent of the training directors. Rules training and the periodic rules examinations were within the purview of the operating departments. We found only one case in which the traininq director was responsible for rules training and that was limited to initial rules training. In six of the railroads technical skills training was the responsibility of operating personnel. In these six railroads, teaching train operation skills was the responsibility of the transportation department, training for shopcraft job skills was the responsibility of the mechanical department, and teaching maintenance of way skills was the responsibility of the engineering department. We therefore conclude that technical skills training is highly decentralized. This conclusion was further reinforced by the fact that in several of the railroads the technical skills training was further delegated to district superintendents. As a result of the organizational arrangements within the eight railroads, it was virtually impossible in at least six of the eight railroads to find any one person whose major responsibility was employee training in its broadest application.

A result of the highly decentralized training function generally was lack of communication among the various training departments of each of the railroads concerning the training materials each department had available. Further, there appeared to be no uniformity of training methods or goals among the eight railroads and among the various departments having training responsibilities.

2. Analyze the Need for Trainee Wage Standards

For the most part, the railroads studied did not have any system that could clearly identify the total cost of employee training. This was in large part due to the highly decentralized and fragmented nature of the training effort. If nothing else, a thorough organizational study of the type recommended would need to produce cost benefit analyses. This alone should prove very helpful to the railroad industry in its planning of training programs.

The subject of trainee wages has long been a major issue in contract negotiations between railroad management and unions. The number of contracts and the variety of clauses within the industry and even within an individual railroad are so diverse that it is unlikely that any uniform standard can be found within the industry. Such a study would involve extensive research and analysis of existing union contracts, as assessment of the background and history of various clauses, and some appraisal of the problems and roadblocks that might be encountered in achieving some sort of uniformity of practice.

For the study of trainee wage scales a sample will need to be chosen and the sample will include both railroads and unions. . Since much of the data for this study will be background data on contract clauses, their purpose, development history, and administration, the study team will need to have the enthusiastic cooperation and candor of both parties to gather necessary data.

Perhaps the most serious problem that implementation of the university concept may encounter is the question of the willingness of the industry to hire people who have been trained in such a center. Included in this problem of willingness to hire is the question of the level at which a "university trained" new employee would enter the industry. This is a matter that will be of concern to both railroad managements and the unions. An additional factor that will need to be considered is the degree to which the industry might be willing to use the centralized facilities for retraining and technological updating programs.

The study of the university concept is important to the BCTP concept. However, it would be possible for FRA to study the practicality of the establishment of one or several railroad training centers independent of the development of the BCTPs. As a practical matter, if central, "university" training facilities were developed, they would provide a vehicle through which the BCTPs could be developed and delivered.

D.   Industry Responsibility

Both Recommendations #10 and #11 will require extensive study of practices and agreements that exist within the industry. Our concept of this study does presume that it would be done on a sample basis. The companies chosen as the sample companies will be required to cooperate extensively with the study team. For example, an adequate study of centralized vs. decentralized training will require that a sample of railroads be willing to share detailed cost data with the survey organization. In addition, it will require that a sample of railroads be willing to permit a survey study team to establish experimental designs through which the effectiveness of various training programs can be evaluated.

Railroad Organizations

Department of Transportation (DOT) - The Executive agency responsible for establishing national transportation policy.

Federal Railroad Administration (FRA) - The agency within the Department of Transportation whose mission is to assure a safe, efficient and progressive railroad network capable of meeting present and future national transportation needs.

United States Railway Association (USRA) - The quasi-public planning body established by the Regional Rail Reoraanization Act whose mission was to plan the consolidation of the major bankrupt northeast and midwest railroads into the Consolidated Rail Corporation (Conrail) and to oversee the performance of Conrail.

Interstate Commerce Commission (ICC) - The regulatory body responsible for the economic and service regulation of the entire railroad industry.

Association of American Railroads (AAR) - The trade association for the railroad industry.

National Railway Labor Conference (NRLC) - The organization that conducts national labor contract negotiations for the railroad industry.

Railway Labor Executives' Association (RLEA) - An organization representing all of railroad labor in relation to legislation and governmental affairs.

Railroad Retirement Board (RRB) - The public agency responsible for administering the railroad retirement system and the railroad unemployment compensation program.

Railway Education Bureau (REB) - A private training organization which specializes in published material used to train railroad employees.